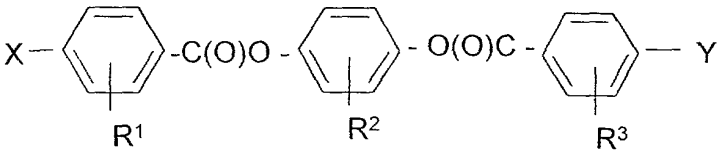
I Claim:

1. Mesogens having the following general formula:



wherein

X and Y independently are selected from the group consisting of terminal functionalities and polymerizable groups, provided that, when X and Y both are polymerizable groups, X and Y are other than bis- vinyl terminated groups;

R^2 is a bulky organic group having a bulk greater than R^1 and R^3 whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 adapted to maintain said nematic state.

2. The mesogens of claim 1 wherein X and Y independently are selected from the group consisting of polymerizable groups.

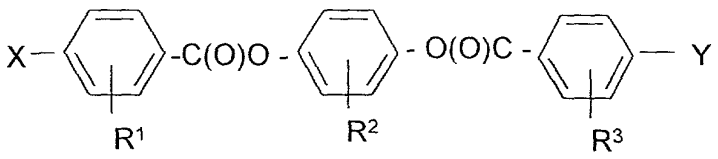
3. The mesogens of claim 1 wherein R^2 is selected from the group consisting of alkyl groups having from about 1 to 6 carbon atoms and aryl groups.

4. The mesogens of claim 2 wherein R^2 is selected from the group consisting of methyl groups, t-butyl groups, isopropyl groups, secondary butyl groups, and phenyl groups.

5. The mesogens of claim 1 wherein R^2 is selected from the group consisting of a methyl group and a t-butyl group.

6. The mesogens of claim 2 wherein R^2 is selected from the group consisting of a methyl group and a t-butyl group.

7. Mesogens having the following general formula:



wherein

X and Y independently are selected from the group consisting of terminal functionalities and polymerizable groups, said groups being independently selected from the group consisting of acryloyloxy groups, methacryloyloxy groups, hydroxyl groups, and acryloyloxy alkyoxy groups, methacryloyloxy alkoxy groups, alkoxy groups and alkoxoyl groups comprising alkyl groups having from about 2 to about 12 carbon atoms, provided that, when X and Y are both polymerizable groups, X and Y are other than unsubstituted bis- vinyl terminated groups;

R^2 is a bulky organic group having a bulk greater than R^1 and R^3 whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 adapted to form said nematic state.

8. The mesogens of claim 7 wherein said alkyl groups have from about 2 to about 9 carbon atoms.

9. The mesogens of claim 7 wherein said alkyl groups having from about 2 to about 6 carbon atoms.

10. The method of claim 7 wherein said polymerizable groups are selected from the group consisting of cinnamoyloxy groups, acryloyloxy groups, methacryloyloxy groups, and thioalkyloxy grous, acryloyloxy alkoxy groups, and methacryloyloxy alkyloxy groups comprising an alkyl moiety having from about 2 to about 12 carbon atoms, said alkyl moiety comprising CH_2 groups, wherein one or more of said CH_2 groups independently can be substituted by oxygen, sulfur, or an ester group; provided that at least 2 carbon atoms separate said oxygen or said ester group.

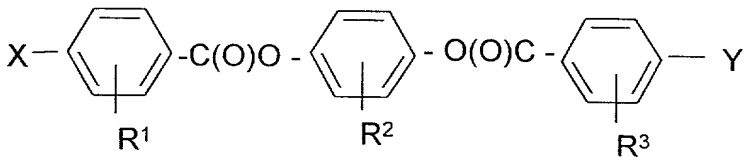
11. The mesogens of claim 7 wherein X and Y independently are selected from the group consisting of acryloyloxy alkyloxy groups and methacryloyloxy alkyloxy groups.

12. The mesogens of claim 11 wherein n is from about 2 to about 9.

13. The mesogens of claim 11 wherein n is from about 2 to about 6.

14. The mesogens of claim 11 wherein n is 6.

15. Mesogens having the following general formula:



wherein

at least one of X or Y is a polymerizable group; and

the other of X or Y is independently selected from the group consisting of ester groups, organic acid groups, amine groups, hydroxyl groups, sulfhydryl groups, groups comprising a polymerizable unsaturated carbon-carbon bond, and spacer groups provided that, when X and Y are both polymerizable groups, X and Y are not bis-vinyl terminated groups;

R^2 is a bulky organic group having a bulk greater than R^1 and R^3, whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 adapted to form said nematic state.

16. The mesogens of claim 15 wherein said polymerizable groups are selected from the group comprising a polymerizable unsaturated carbon-carbon bond.

17. The mesogens of claim 15 wherein at least one of X or Y is selected from the group consisting of cinnamoyloxy groups.

18. The mesogens of claim 15 wherein one of X or Y is selected from the group consisting of acryloyloxy alkyloxy groups and methacryloyloxy alkyloxy groups.

19. A quantity of said mesogens of claim 1 wherein a proportion of a substituent selected from the group consisting of X, Y, and a combination thereof comprises a crystallization retardant, said proportion and said bulky organic group being effective to maintain said nematic state and to produce said effective rheology

and workability at room temperature.

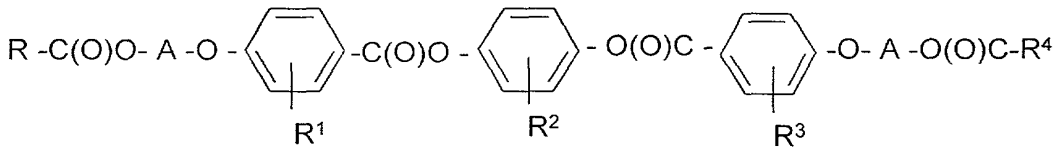
20. The mesogens of claim 19 wherein said crystallization retardant comprises at least one halogen atom.

21. The mesogens of claim 18 wherein said halogen atom is selected from the group consisting of chlorine, bromine, and iodine.

22. The mesogens of claim 19 wherein said proportion is from about 3 to about 50 mole%.

23. The mesogens of claim 19 wherein said proportion is from about 10 to about 15 mole%.

24. Mesogens having the following general structure:



wherein

A is selected from the group consisting of alkyl groups and methyl-substituted alkyl groups having from about 2 to about 12 carbon atoms; and

at least one of R and R^4 is a polymerizable group, provided that, when R and R^4 are both polymerizable groups, R and R^4 are not bis-vinyl terminated groups;

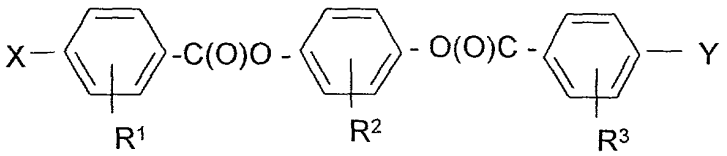
R^2 is a bulky organic group having a bulk greater than R^1 and R^3, whereby, when both R and R^4 are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while

suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 adapted to form said nematic state.

25. The mesogens of claim 24 wherein at least one of R and R^4 is selected from the group consisting of acryloxy groups and methacryloxy groups.

26. Mesogens having the following general formula:



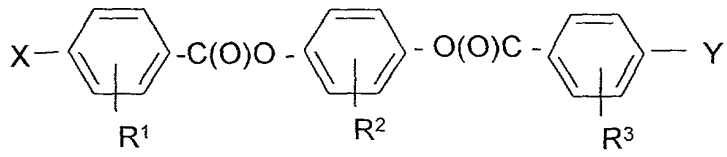
wherein

X and Y are selected from the group consisting of terminal functionalities and polymerizable groups, and at least one of X or Y comprises a bridging agent;

R^2 is a bulky organic group having a bulk greater than R^1 and R^3 whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 which do not interfere with formation of said nematic state.

27. Mesogens having the following general formula:



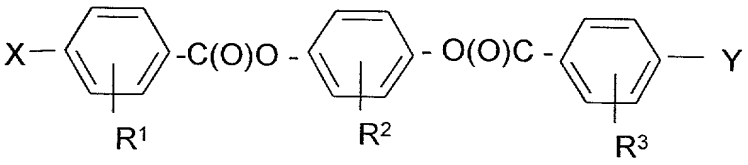
wherein

X and Y are independently selected from the group consisting of acryloyloxy groups, methacryloyloxy groups, hydroxyl groups, and acryloyloxy alkyoxy groups, methacryloyloxy alkoxy groups, alkoxy groups and alkoxoyl groups comprising alkyl groups having from about 2 to about 12 carbon atoms, wherein at least one of X or Y comprises a bridging agent;

R^2 is a bulky organic group having a bulk greater than R^1 and R^3 whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 adapted to form said nematic state.

28. Mesogens having the following general formula:



wherein

at least one of X or Y comprises a bridging agent; and

the other of X or Y is independently selected from groups comprising ester groups, organic acid groups, amine groups, hydroxyl groups, sulfhydryl groups, groups comprising a polymerizable unsaturated carbon-carbon bond, and spacer groups;

R^2 is a bulky organic group having a bulk greater than R^1 and R^3 whereby, when both X and Y are polymerizable groups, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 adapted to form said nematic state.

29. The mesogens of claim 26 wherein said bridging agent comprises a dicarboxoyl group comprising from about 4 to about 12 carbon atoms.

30. The mesogens of claim 27 wherein said bridging agent comprises a dicarboxoyl group comprising from about 4 to about 12 carbon atoms.

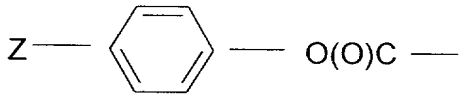
31. The mesogens of claim 28 wherein said bridging agent comprises a dicarboxoyl group comprising from about 4 to about 12 carbon atoms.

32. The mesogens of claim 26 wherein said bridging agent comprises an oligodialkylsiloxane comprising alkyl groups comprising from about 1 to about 3 carbon atoms.

33. The mesogens of claim 27 wherein said bridging agent comprises an oligodialkylsiloxane comprising alkyl groups comprising from about 1 to about 3 carbon atoms.

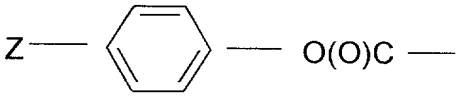
34. The mesogens of claim 28 wherein said bridging agent comprises an oligodialkylsiloxane comprising alkyl groups comprising from about 1 to about 3 carbon atoms.

35. The mesogens of claim 1 wherein at least one of X or Y has the following general structure:



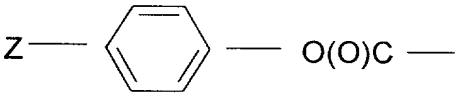
wherein Z is selected from the group consisting of a terminal functionality and a polymerizable group.

36. The mesogens of claim 7 wherein at least one of X or Y has the following general structure:



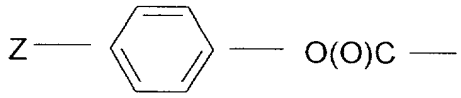
wherein Z is selected from the group consisting of a terminal functionality and a polymerizable group.

37. The mesogens of claim 15 wherein at least one of X or Y has the following general structure:



wherein Z is selected from the group consisting of a terminal functionality and a polymerizable group.

38. The mesogens of claim 24 wherein at least one of X or Y has the following general structure:



wherein Z is selected from the group consisting of a terminal functionality and a polymerizable group.

39. The mesogens of claim 1 wherein R and R^3 are selected from the group consisting of hydrogen and a methyl group.

40. The mesogens of claim 7 wherein R and R^3 are selected from the group consisting of hydrogen and a methyl group.

41. The mesogens of claim 15 wherein R and R^3 are selected from the group consisting of hydrogen and a methyl group.

42. The mesogens of claim 24 wherein R and R^3 are selected from the group consisting of hydrogen and a methyl group.

43. The mesogens of claim 24 wherein said alkyl groups have from about 2 to about 9 carbon atoms

44. The mesogens of claim 24 wherein said alkyl groups have from about 2 to about 6 carbon atoms.

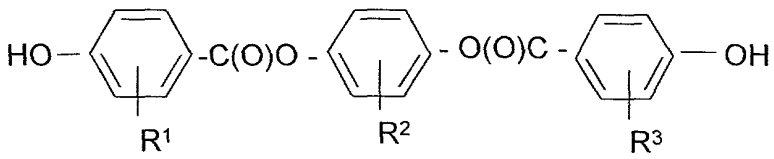
45. The mesogens of claim 24 wherein said alkyl groups have 6 carbon atoms.

46. The mesogens of claim 24 wherein A is selected from the group consisting of alkyl groups and methyl-substituted alkyl groups having from about 2 to about 9 carbon atoms.

47. The mesogens of claim 24 wherein A is selected from the group consisting of alkyl groups and methyl-substituted alkyl groups having from about 2 to about 6 carbon atoms.

48. The mesogens of claim 24 wherein A has 6 carbon atoms.

49. Mesogens having the following general formula:



R^2 is a bulky organic group having a bulk greater than R^1 and R^3 whereby, when both terminal OH groups are reacted with a polymerizable group, said bulk is adapted to provide sufficient steric hindrance to achieve a nematic state at room temperature while suppressing crystallinity at room temperature, thereby providing effective rheology and workability at room temperature; and

R^1 and R^3 are selected from groups less bulky than R^2 adapted to form said nematic state.

50. The mesogens of claim 49 wherein R^2 is selected from the group consisting of alkyl groups having from about 1 to 6 carbon atoms and aryl groups.

51. The mesogens of claim 49 wherein R^2 is selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms and phenyl groups.

52. The mesogens of claim 49 wherein R^2 is selected from the group consisting of methyl groups, t-butyl groups, isopropyl groups, secondary butyl groups, and phenyl groups.

53. The mesogens of claim 49 wherein R and R^3 are selected from the

group consisting of hydrogen and a methyl group.

54. The mesogens of claim 50 wherein R and R^3 are selected from the group consisting of hydrogen and a methyl group.

55. The mesogens of claim 51 wherein R and R^3 are selected from the group consisting of hydrogen and a methyl group.

56. The mesogens of claim 52 wherein R and R^3 are selected from the group consisting of hydrogen and a methyl group.

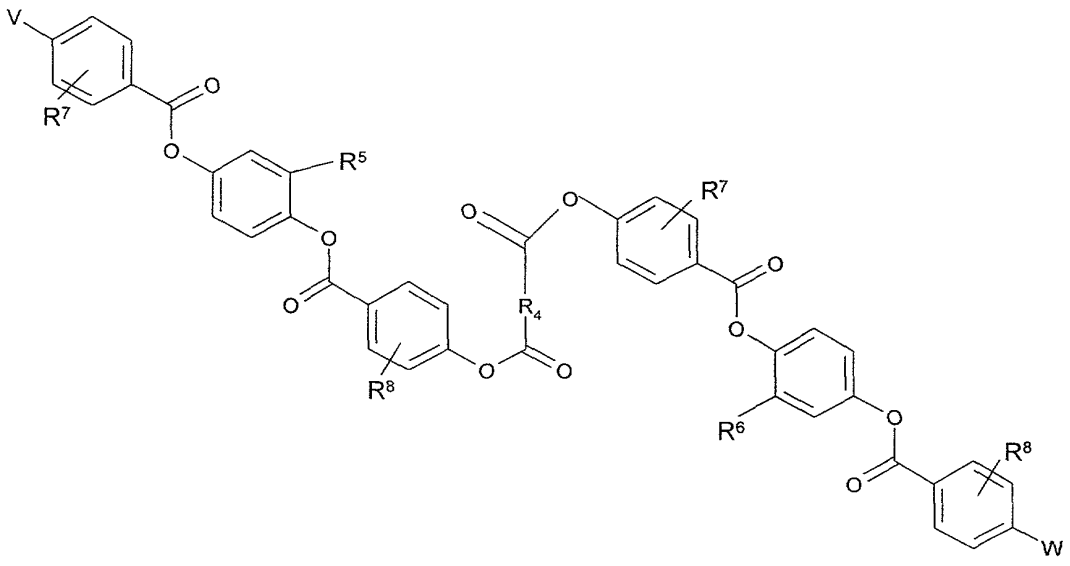
57. The mesogens of claim 49 wherein R and R^3 are hydrogen.

58. The mesogens of claim 50 wherein R and R^3 are hydrogen.

59. The mesogens of claim 51 wherein R and R^3 are hydrogen.

60. The mesogens of claim 52 wherein R and R^3 are hydrogen.

61. Mesogens having the following general structure:



wherein

R^4 is an alkylene group having from about 2 to about 20 carbon atoms;

R^5 and R^6 are selected from the group consisting of hydrogen, halogen, and bulky organic groups; and,

V and W independently are selected from the group consisting of terminal functionalities and polymerizable groups.

62. The mesogens of claim 61 wherein at least one of R^5 and R^6 is a bulky organic group selected from the group consisting of alkyl groups having from about 1 to 6 carbon atoms and aryl groups.

63. The mesogens of claim 61 wherein at least one of R^5 and R^6 is a bulky organic group is selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms and phenyl groups.

64. The mesogens of claim 61 wherein at least one of R^5 and R^6 is a bulky organic group is selected from the group consisting of methyl groups, t-butyl groups, isopropyl groups, secondary butyl groups, and phenyl groups.

65. The mesogens of claim 61 wherein at least one of R^5 and R^6 is selected from the group consisting of methyl groups and t-butyl groups.

66. The mesogens of claim 61 wherein R^4 has from about 2 to about 12 carbon atoms.

67. The mesogens of claim 62 wherein R^4 has from about 2 to about 12 carbon atoms.

68. The mesogens of claim 63 wherein R^4 has from about 2 to about 12 carbon atoms.

69. The mesogens of claim 64 wherein R^4 has from about 2 to about 12 carbon atoms.

70. The mesogens of claim 61 wherein R^4 has from about 6 to about 12

carbon atoms.

71. The mesogens of claim 62 wherein R^4 has from about 6 to about 12 carbon atoms.

72. The mesogens of claim 63 wherein R^4 has from about 6 to about 12 carbon atoms.

73. The mesogens of claim 64 wherein R^4 has from about 6 to about 12 carbon atoms.

74. The mesogens of claim 61 wherein said terminal functionalities independently are selected from the group consisting of hydroxyl groups, amino groups, sulfhydryl groups, and spacer groups.

75. The mesogens of claim 62 wherein said terminal functionalities independently are selected from the group consisting of hydroxyl groups, amino groups, sulfhydryl groups, and spacer groups.

76. The mesogens of claim 63 wherein said terminal functionalities independently are selected from the group consisting of hydroxyl groups, amino groups, sulfhydryl groups, and spacer groups.

77. The mesogens of claim 64 wherein said terminal functionalities independently are selected from the group consisting of hydroxyl groups, amino groups, sulfhydryl groups, and spacer groups.

78. The mesogens of claim 61 wherein said terminal functionalities are hydroxyl groups.

79. The mesogens of claim 62 wherein said terminal functionalities are hydroxyl groups.

80. The mesogens of claim 63 wherein said terminal functionalities are hydroxyl groups.

81. The mesogens of claim 64 wherein said terminal functionalities are hydroxyl groups.

82. The mesogens of claim 61 wherein said polymerizable groups are selected from the group consisting of alkenyl ester groups comprising a polymerizable unsaturated carbon-carbon bond wherein said alkenyl group has from about 2 to about 12 carbon atoms.

83. The mesogens of claim 82 wherein said alkenyl group has from about 2 to about 9 carbon atoms.

84. The mesogens of claim 82 wherein said alkenyl group has from about 2 to about 6 carbon atoms.

85. The mesogens of claim 61 wherein V and W independently are selected from the group consisting of acryloyloxy alkoxy groups and methacryloyloxy alkoxy groups.

86. The mesogens of claim 62 wherein V and W independently are selected from the group consisting of acryloyloxy alkoxy groups and methacryloyloxy alkoxy groups.

87. The mesogens of claim 63 wherein V and W independently are selected from the group consisting of acryloyloxy alkoxy groups and methacryloyloxy alkoxy groups.

88. The mesogens of claim 64 wherein V and W independently are selected from the group consisting of acryloyloxy alkoxy groups and methacryloyloxy alkoxy groups.

89. The mesogens of claim 69 wherein V and W independently are selected from the group consisting of acryloyl groups and methacryloyl groups.

90. The mesogens of claim 73 wherein V and W independently are selected from the group consisting of acryloyloxy alkoxy groups and methacryloyloxy alkoxy groups.

91. A composition comprising alkylenedioic bis-(4-{2-R^2-4-[4-(hydroxy)-benzoyloxy]-phenoxycarbonyl}-phenyl) esters wherein R^2 is a selected from the group consisting of alkyl groups having from about 1 to 6 carbon atoms and aryl groups.

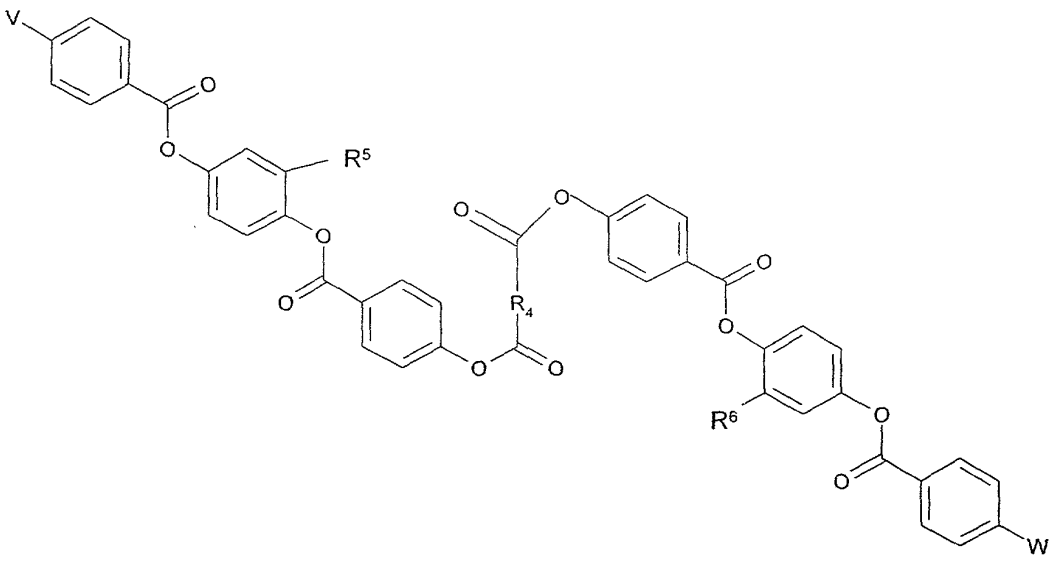
92. The composition of claim 91 wherein R^2 is selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms and phenyl groups.

93. The composition of claim 92 wherein R^2 is selected from the group consisting of methyl groups, t-butyl groups, isopropyl groups, secondary butyl groups, and phenyl groups.

94. The composition of claim 91 wherein R^2 and R^2 are selected from the group consisting of methyl groups and t-butyl groups.

95. A composition comprising decanedioic acid bis-(4-{2-tert-butyl-4-[4-(2-methyl-acryloyloxy)-benzoyloxy]-phenoxycarbonyl}-phenyl) ester.

96. A composition comprising a mesogen having the following general structure:



wherein

R^5 and R^6 are selected from the group consisting of hydrogen, halogen, alkyl groups having from about 1 to 6 carbon atoms, and aryl groups; and,

V and W independently are selected from the groups comprising polymerizable groups and terminal functionalities.

97. The composition of claim 96 wherein V and W independently are selected from the group consisting of acryloyloxy groups, methacryloyloxy groups, acryloyloxy alkoxy groups and methacryloyloxy alkoxy groups.

98. The composition of claim 97 wherein R^5 and R^6 are selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms and phenyl groups.

99. The composition of claim 97 wherein R^5 and R^6 are selected from the group consisting of methyl groups, t-butyl groups, isopropyl groups, secondary butyl groups, and phenyl groups.

100. The composition of claim 97 wherein R^5 and R^6 are selected from the

group consisting of methyl groups and t-butyl groups.

101. The composition of claim 98 wherein R^5 and R^6 are selected from the group consisting of alkyl groups having from about 1 to about 4 carbon atoms and phenyl groups.

102. The composition of claim 98 wherein R^5 and R^6 are selected from the group consisting of methyl groups, t-butyl groups, isopropyl groups, secondary butyl groups, and phenyl groups.

103. The composition of claim 98 wherein R^5 and R^6 are selected from the group consisting of methyl groups and t-butyl groups.

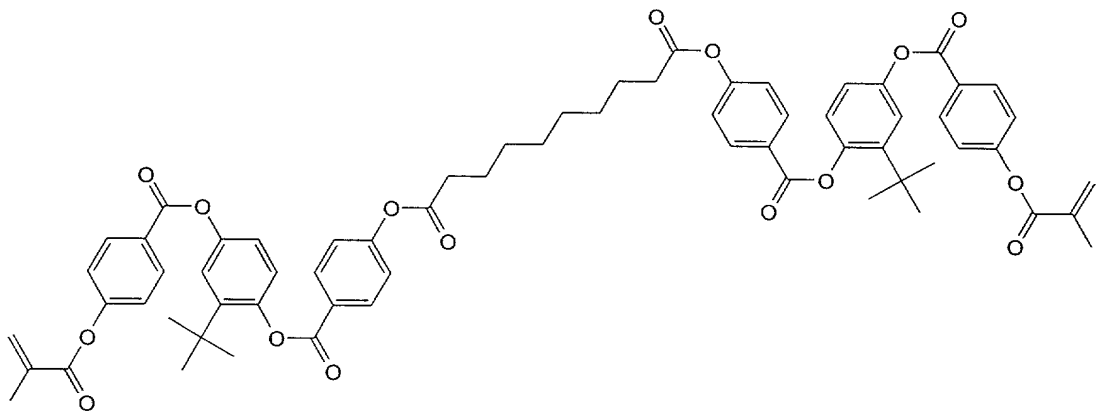
104. The composition of claim 97 wherein said terminal functionalities independently are selected from the group consisting of hydroxyl groups, amino groups, and sulfhydryl groups.

105. The composition of claim 97 wherein said terminal functionalities are hydroxyl groups.

106. The composition of claim 102 wherein said terminal functionalities independently are selected from the group consisting of hydroxyl groups, amino groups, and sulfhydryl groups.

107. The composition of claim 102 wherein said terminal functionalities are hydroxyl groups.

108. A composition comprising a mesogen having the following general structure:



$C_{66}H_{66}O_{16}$
Exact Mass: 1114.44
Mol. Wt.: 1115.22
C, 71.08; H, 5.97; O, 22.95

109. The mesogens of claim 1 wherein said polymerizable groups are groups adapted to be polymerized by either free radical polymerization or by Michael addition.

110. The mesogens of claim 7 wherein said polymerizable groups are groups adapted to be polymerized by either free radical polymerization or by Michael addition.

111. The mesogens of claim 15 wherein said polymerizable groups are groups adapted to be polymerized by either free radical polymerization or by Michael addition.